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Socio-psychological aspects of the military aggression in Ukraine: a focal point on women's reproductive health

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The review article analyzes national and foreign scientific researches on the impact of social and-psychological aspects of the military aggression in Ukraine on women's reproductive health. The relevance of this problem has been studied since the beginning of the aggression in eastern Ukraine and Crimea, when a completely new segment of the population first appeared – internally displaced persons (IDPs). The full-scale invasion in Ukraine, which has been ongoing since February 2022, continues to destroy the lives of civilians and infrastructure, leading to large-scale internal migration and forced departure of the population outside the country. The criticality of the humanitarian catastrophe is confirmed by the fact that by the beginning of 2025, 12.7 million people are in need of humanitarian assistance, and the military aggression has become the largest one in Europe. According to various sources, from 8 to 10 million Ukrainians were forced to leave their homes, including 3.7 million who became IDPs, most of whom are women and children.
The analysis of foreign and Ukrainian scientific publications shows that the consequences of traumatic events during war are symptoms of anxiety, depression, post-traumatic stress disorder, which are caused by changes in habitual living conditions, permanent uncertainty, threats to personal safety and the safety of immediate family, loss of loved ones, etc. The data presented confirm that pregnant women are most susceptible to traumatic events and their consequences during hostilities, on whom the war factor can have a critical impact, increasing the risk of adverse obstetric and perinatal consequences. The cessation of the effect of such a significant stress factor on the organism as the military action is impossible before its end, regardless of whether the woman continues to be in her place of permanent residence, has moved to a safer region of the country, or is a refugee who has left the country. This view of the problem confirms the need for a comprehensive approach to diagnosing psychological disorders in pregnant women and requires the immediate need to develop individual programs for medical and psychological support for women during pregnancy.
Keywords: *military aggression in Ukraine, social and psychological state, women, pregnancy, consequences of war, stress, anxiety, post-traumatic stress disorder, internally displaced persons, refugees.*

Соціально-психологічні аспекти військової агресії в Україні: у фокусі – репродуктивне здоров'я жінок

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В оглядовій статті проведено аналіз вітчизняних та закордонних наукових досліджень щодо впливу соціально-психологічних аспектів військової агресії в Україні на репродуктивне здоров'я жінок. Актуальність цієї проблеми досліджується з початку агресії у 2014 році на сході України та в Криму, коли вперше з'явився абсолютно новий прошарок населення – внутрішньо переміщені особи (ВПО) з цих регіонів. Повномасштабне вторгнення в Україну, яке триває з лютого 2022 року, продовжує руйнувати життя цивільних людей і інфраструктуру, що призводить до масштабної внутрішньої міграції та вимушеного виїзду населення за межі країни. Критичність гуманітарної катастрофи підтверджується тим фактом, що на початок 2025 року 12,7 млн людей потребують гуманітарної допомоги, а військова агресія стала найбільшою в Європі. За різними даними, від 8 до 10 млн українців були змушені покинути свої домівки, зокрема 3,7 млн стали ВПО, більшість з яких становлять жінки та діти.
Аналіз закордонних та вітчизняних наукових публікацій свідчить про те, що наслідками впливу травматичних подій у період війни є симптоми тривоги, депресії, посттравматичного стресового розладу, які зумовлені зміною звичних умов життя, перманентною невизначеністю, загрозою особистій безпеці та безпеці рідних, втратою близьких людей тощо. Наведені дані підтверджують, що найбільш вразливою категорією до впливу травматичних подій та їх наслідків у період бойових дій є вагітні, на яких фактор війни може чинити критичний вплив, підвищуючи ризик несприятливих акушерських і перинатальних ускладнень. Припинення дії такого потужного стресового чинника на організм, як війна, є неможливим до моменту її завершення – незалежно від того, чи йдеться про жінку, яка залишається у місці постійного проживання, переїхала до більш безпечного регіону країни чи стала біженкою за кордоном. Такий погляд на проблему підтверджує необхідність комплексного підходу до діагностики психологічних порушень у вагітних та обумовлює нагальну потребу в розробці індивідуальних програм медико-психологічного супроводу жінок під час вагітності в умовах війни.
Ключові слова: *військова агресія в Україні, соціальний та психологічний стан, жінки, вагітність, наслідки війни, стрес, тривожність, посттравматичний стресовий розлад, внутрішньо переміщені особи, жінки-біженки.*

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The impact of military conflict on the psycho-emotional well-being of women in Ukraine began to be studied in 2014, when, as a result of aggression in eastern country and Crimea, a completely new segment of the population appeared – internally displaced persons (IDPs) from these regions. Currently, the full-scale invasion, which began in February 2022, has been going on for four years and continues to destroy the lives of civilians and infrastructure, leading to large-scale internal migration and forced departure from the country, mainly of women and children. The criticality of the humanitarian catastrophe is confirmed by the fact that at the beginning of 2025, 12.7 million people (36%) are in need of humanitarian assistance [1]. Today, the military conflict, which is the largest in Europe, has become a significant threat not only to Ukraine, but also to the entire world [2, 3].

According to the United Nations Human Rights Monitoring Mission in Ukraine, at least 12,881 Ukrainians have been killed since the start of the full-scale war, including 681 children. Almost 30,500 have been injured. However, the mission believes that the true figures are likely much higher. According to information released by the World Health Organization (WHO), over the past three years of war, the aggressor has carried out more than 2,300 attacks on medical facilities, personnel, transport, supplies and patients in Ukraine [4]. Between 8 and 10 million Ukrainians have been forced to flee their homes, including 3.7 million IDPs. This displacement has disproportionately affected women and girls, increasing their vulnerability to gender-based violence and hindering their access to support services. At the same time, civilians who remain in frontline regions not only face constant shelling from various types of weapons, but also constantly have to make a choice: flee to safer regions, leaving everything behind, or stay and risk injury, death, and limited access to basic services [4, 5].

The objective of the review to analyze national and foreign scientific researches as for the impact of socio-psychological aspects of the military aggression in Ukraine on women's reproductive health.

The ongoing war against Ukraine, in addition to the already mentioned humanitarian problems and huge human losses, leads to the destruction of not only the anthropogenic environment, but also destroys the natural environment of the regions of Ukraine. The so-called scorched earth tactics of hostilities (shelling that causes forest fires; flooding as a result of destruction of dams; digging trenches and laying anti-tank mines; military activities carried out in ecologically vulnerable areas, such as nature reserves) keep up to cause environmental damage to the territory of Ukraine [6]. In addition to environmental damage, contamination of water, soil and air with pollutants and toxic chemicals as a result of military actions poses a direct threat to human health [7]. In addition, the seizure of the Zaporizhzhia Nuclear Power Plant and the hostilities that took place (and continue) near this largest nuclear power plant in Europe and close to the world-famous Chernobyl, further increase fears about radioactive danger [8]. And damage to industrial and commercial infrastructure can lead to contamination of water sources, which can be dangerous for human health and the ecosystem. According to experts, the consequences of this war for such state-forming systems as healthcare, education, social security will be felt for a long time to come [9]. Thus, all these unprecedented political, socio-economic and climatic upheavals taking place in the world are forcing hundreds of millions of people to leave their homes [10]. Those most affected by the war face life-threatening risks and difficult living conditions. Also to the physical destruction caused by the prolonged war, millions of people have suffered psychological trauma and stress caused by constant uncertainty, fear of shelling and serious protection risks [11]. Ukrainian society is full of events that have a traumatic impact. The First Soviet-Ukrainian War (1917–1921), World War II (1939–1945), the Holodomor (1932–1933), deportation to Siberia and concentration camps, the "red terror", punitive psychiatry, the Chernobyl disaster – this is a far from complete list of tragic pages of history that influenced the development of stress-associated mental disorders and the formation of stigmatization of mental health in general [12]. The war in Ukraine has become a significant part of the global escalation, where people, both military and civilian, who are in conflict zones and hostilities often develop neuropsychiatric diseases, such as depression, post-traumatic stress disorder (PTSD), suicidal thoughts and anxiety disorders, affecting their emotional response system. Such mental disorders are usually very common among war refugees, which is why their effects are recorded many years after forced displacement. This increased risk may be a consequence not only of the impact of trauma during the war, but may also depend on post-migration socio-economic factors [13].

Assessment of mental well-being and psychological distress among refugees, IDPs and non-displaced persons from Ukraine seeking online psychological support in Ukraine and 24 European Union countries demonstrated low levels of mental well-being and high psychological distress, with 81% having risks of developing depressive conditions and 57% having serious psychological disorders. Particularly high rates among refugees and IDPs are at risk of developing depression and serious psychological disorders [5]. As of today mental health status of Ukrainians is generally comparable to the citizens of countries that have experienced long-term conflicts and wars. Depression, anxiety, PTSD, bipolar disorder or schizophrenia are diagnosed in every fifth person (22%) who has experienced a war or other conflict in the past 10 years. Applying these estimates to Ukraine, WHO expects that about 9.6 million people in Ukraine may have a mental health disorder [14, 15]. A identity under the influence of war loses previously established emotional stability and feels severe fatigue from the constant impact of the stress factor and a feeling of anxiety. Change in habitual living conditions, threat to personal safety and loss of loved ones can significantly undermine mental health and cause emotional disorganization [16, 17].

IDPs and people who were forced to leave Ukraine and become refugees reported higher levels of PTSD symptoms than those who continued to reside in safer areas of the country. There were no significant differences in PTSD between those displaced within and outside Ukraine as a result of the invasion. This suggests that even evacuation from affected or occupied territories to

other regions of the country leads to mental health problems [18]. A study conducted using a multi-stage random sample of the general population in two large cities of Ukraine (Kharkiv and Lviv) showed a wide spread of direct exposure to conflict-related traumatic events (65%) among IDPs, with urban residents constituting a large minority (23%) [19]. The mental health of war-affected Ukrainians surveyed 6 months after the full-scale invasion was largely dependent on the degree of direct involvement in hostilities, the level of physical violence, or human suffering. In addition, the study found several predictors of trauma-related symptoms, including PTSD and chronic PTSD, such as anxiety, depression, stress, low resilience, and subjective life satisfaction [20].

As noted, mental disorders are generally very common among refugees from war and remain a problem many years after displacement. This increased risk may not only be a consequence of the impact of war-related trauma, but may also depend on post-migration socio-economic factors [21].

A separate category of people affected by military actions are civilians who have been or continue to live in occupied territories for some time. Studies show that Ukrainians living in previously occupied frontline territories are at particular risk. The prevalence of PTSD was higher (from 47.8 to 51.33%) than in other population groups affected by the war [22]. Currently, approximately 1.5 million civilians are in need of assistance in parts of Donetsk, Kherson, Luhansk and Zaporizhia regions that are under occupation [4].

A survey conducted in Ukraine at the beginning of the war showed that the prevalence rates of symptoms of psychological distress, anxiety, depression, and insomnia were high [23]. At the same time, a survey conducted 9–12 months after the start of the invasion of Ukraine showed that the lowest levels of stress, anxiety and PTSD were observed among non-displaced persons, with significantly higher levels among IDPs and the highest among refugees. Forced displacement from a previous place of residence and, especially, entering a new cultural environment significantly causes mental health problems caused by the impact of the war factor [24].

The ongoing war and uncertainty of the situation among displaced persons can cause anxiety and lead to stress reactions, which are exacerbated by endless information about hostilities [25]. Approximately 70% of Ukrainian IDPs suffered blast exposure and mental health deterioration during the first few months of the war conflict [26]. The cause of mental disorders in refugees can be both pre-migration trauma and the post-migration process. In addition, negative factors of post-migration adaptation can hinder the recovery of refugees from pre-migration trauma. Therefore, Ukrainian refugees need social support programs and special attention to their mental health to improve post-migration adaptation and integration into the society of the host country [27].

Psychological warfare is an integral part of war. One study assessed the impact of objective and subjective war indicators. And while objective factors, which included missile and drone attacks across the country, as well as active fighting near the front line in the south and east of the country, were directly dependent on the region, high subjective threat expectations were also observed in the more western regions of the country. In addition to PTSD, the impact of war factors can also lead to sleep disorders, which include chronic insomnia and increased arousal before bedtime. The study found that the objective impact of war contributed to the development of PTSD, but not sleep disorders, while subjective threat predicted both symptom domains. Thus, 88% of civilians reported poor or very poor sleep quality [28]. That is, the list of factors that affect the psychological state of the population during the war includes subjective components that affect residents of even relatively safer regions of Ukraine. It becomes clear that one of the main reasons for missile attacks and air strikes is not only the goal of hitting people or infrastructure facilities, but also the psychological pressure on the civilian population due to the uncertainty of the time and place of such air strikes. Whenever people are exposed to significant psychological stress for a certain period of time, people can develop somatic symptoms and mental illnesses. An example of such factors is the impact of the air raid warning signal, which warns the civilian population of an upcoming air strike, which has become a "usual" factor for most regions [29].

The vast majority of IDPs and refugees who have fallen victim to these factors are children and women. So, for example, only 36 thousand Ukrainians were given temporary protection in Estonia, among whom the majority are women of reproductive age [30]. A survey of Ukrainian war refugees, completed in cooperation with the University of Tartu's Applied Social Science Research Center RAKE and the think tank Praxis, notes that 74% of war refugees who have reached Estonia are young, healthy, highly educated women (more than half of whom have a university degree). It should be noted that half of the adult war refugees who arrived in Estonia had minor children [31]. It should be noted that the impact of war on children has numerous negative consequences, including immediate stress reactions, increased risk of certain mental disorders, suffering from forced separation from parents, fear for their own safety and the safety of their loved ones [32]. However, the results of a study conducted among children who became refugees and IDPs showed that children cope much better with difficult events related to forced change of residence if they are accompanied by their parents [33]. And certainly the majority of parents who stay with their children are women mothers.

At the same time, child health and family involvement issues were identified as major stressors and perceived threats for pregnant women and young mothers who became displaced [34].

An analysis of the psychological state of forcibly displaced women during war has shown that military conflicts can cause various forms of stress. These conditions can affect both the physical and mental health of women, as well as complicate their adaptation to new living conditions [16]. Refugee and displaced women have poorer health outcomes than migrants and the host population. Access to health care is a persistent challenge for these women, who have suffered physical and psychological trauma and chronic health problems as a result of forced displacement [10, 35]. Thus, according to the Estonian Health Insurance Fund alone, since the start of the full-scale war with Russia in 2022,

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36,300 Ukrainian war refugees have used medical services in Estonia approximately 250,000 times, 10,400 people received emergency care, 6,522 women visited an obstetrician-gynecologist, and 4,158 children were seen by a pediatrician [36]. Mental health professionals specializing in working with refugees have identified pregnant women and women who have recently given birth as particularly vulnerable members of the migrant community [37].

The combination of factors such as increased physical exertion, stressful situations, nutritional and hygiene disorders certainly affects women's health, especially their reproductive system. Since the beginning of the war, 53.4% of Ukrainian women have noticed changes in their usual menstrual cycle. They reported menstrual cycle disorders with manifestations of moderate to excessive abnormal uterine bleeding in combination with dysmenorrhea, a feeling of weakness and increased fatigue, which requires the need to seek medical help as early as possible in order to preserve their own health, in particular reproductive function [38]. Instead, it should be emphasized that women are more prone to traumatic experiences and increased levels of anxiety, depression, PTSD, etc. Studies of stress levels show that its level among women is higher than among men, and the ratio of women to men in the prevalence of PTSD is approximately 2:1 [39, 40].

Pregnancy is an important period in the life of a woman and her family. Pregnant women are very susceptible to various environmental influences [41]. Pregnant women experience increased levels of stress and anxiety even in peacetime, when pregnancy itself affects their mental state. Understanding women's experiences of perinatal anxiety and stress is essential for better supporting women. In wartime, factors such as ensuring physical safety, adapting to new conditions, making difficult decisions, and limited access to health services are significantly increased. This leads to such negative consequences as high rates of maternal and child mortality, an increase in the number of unplanned pregnancies, and an increased risk of complications during pregnancy and childbirth [42–44]. In pregnant women in modern conditions of chronic stress caused by war and socio-economic tension, deviations were found primarily in the level of reactive anxiety [45]. And thereby influencing the level of psychological well-being [46].

Pregnant women from the IDP category are characterized by anxiety-neurotic states, characterized by a significantly higher level of reactive and trait anxiety, which exceed by 3.3 and 2.6 times, respectively, similar indicators in the control group. A high level of reactive and trait anxiety is the basis for the formation of a pathological type of psychological component of gestational dominance, even with a slight negative psycho-emotional impact [47]. Today, in our country, most women have a high level of anxiety during pregnancy. It was most often recorded in women aged 31 to 40. Therefore, a comprehensive examination should include psychological screening tests to assess the level of anxiety and stress [48].

The psycho-emotional state of pregnant women is influenced by individual psychological factors (properties of the nervous system, features of neuropsychic response, emotional stability, self-esteem, value orientations, psychological readiness for pregnancy); socio-psychological factors (experience of interaction with the social environment, satisfaction with marriage, acceptance of social status and social role, satisfaction with material security); obstetric history and the impact of war [49]. At the same time, the war factor can have a critical impact on the health of both mother and child [50]. Prenatal stress during war is a part of our existence, reducing the quality of life of a pregnant woman and affecting on the fetal development and the health of the child in the future [51]. The stress experienced by mothers during the prenatal period can lead to a number of negative consequences in both the short and long term for infants, especially in terms of their physical and neurological development [52]. Increased birth defects during war may be a result of food crises or epidemics due to war and the destruction of supply lines or essential facilities, or directly related to the type of weapons used during the conflict [50]. But still, most authors consider hostilities to be a stress factor that has a direct neurotoxic effect, which can lead not only to disruption of the endocrine system in general and reproductive health in particular, but also to cause both congenital anomalies and cognitive deviations in already born children [53]. It is the prenatal impact of maternal stress that is largely associated with a decline in the child's cognitive functions [54]. If exposure to negative life events in a pregnant woman can increase the risk of congenital heart defects, then experiencing positive events may play a potential protective role [55]. A meta-analysis assessing the association between maternal stress/stressful life events during pregnancy and the risk of congenital heart defects found such an association, but it was not observed for other mental health outcomes such as anxiety and depression [56]. This is certainly not only the impact of negative events that should be considered as a risk factor, for example, for congenital heart defects. A systematic review and meta-analysis showed that maternal obesity, smoking, diabetes, and exposure to organic solvents were significantly associated with such risk [57].

Prenatal stress caused by war has a negative impact not only on the newborn, but also creates a number of emotional experiences in women, which will then have long-term consequences for both her future child and the woman herself. War is a powerful stress factor for pregnant women, which intensifies and provokes many experiences and anxieties and makes them feel constant tension and stress [58]. Along with the physiological changes that occur during pregnancy, war creates additional stressors that increase the risks of developing mental disorders [17]. Over 80,000 Ukrainian women were pregnant at the start of the war, facing enormous stress and numerous challenges to their health and well-being [2].

Anxiety and depression disorders are common today and are caused by a number of factors, including social determinants of health, individual obstetrical situation, access to health facilities, etc. Studies have identified both direct and indirect pathways of significant interaction between depression, anxiety and stress, risk variables and delivery problems. Anxiety, depression and PTSD increase the risk of adverse birth outcomes (preterm birth,

lower birth weight and lower Apgar score) [59]. Stress, malnutrition, and insufficient physical activity are three factors in maternal behavioral lifestyle that can affect immune and central nervous system function in both the mother and fetus, and therefore may increase the risk of developing nervous system / psychiatric disorders [60]. Prolonged chronic stress also negatively affects the general health of the expectant mother: it reduces working capacity and appetite, causes lethargy, apathy, sleep disturbances, and increases the risk of obstetric complications [61]. The results of a systematic review and meta-analysis confirm that psychological stress during pregnancy is associated with an increased risk of miscarriage. These results indicate the need for further research to clarify the correlation between the effects of stress (prior to and during pregnancy) and miscarriage [62]. During hostilities, the chronic stress associated with them is compounded by psycho-emotional trauma for both women and their partners due to pregnancy losses [63]. Maternal mental health deserves attention and has a huge impact on outcomes for both mother and child. Obstetrical providers should be well-versed in screening, identification and basic treatment algorithms, including when and where to refer to appropriate specialist services [64]. The American College of Obstetricians and Gynecologists recommends that clinicians screen patients for symptoms of both depression and anxiety at least once during the perinatal period [65]. Mental health should be a priority in conflict-affected countries, not least because of the well-established links between mental health, individual functioning, and country development. Strategies for mental health promotion and prevention are also needed, as well as building and strengthening mental health information systems, evidence and research in conflict-affected countries [66]. And first of all, in order to provide professional help, it is necessary to clarify what is meant by the concept of negative and positive perinatal experiences. Positive perinatal experiences include joy of returning home, family relationships and support during the war, satisfaction with medical care and coping with stress, positive attitudes towards the child (or own fetus), and patriotic feelings. Conversely, negative perinatal experiences include negative emotions associated with the war, frustration with medical care during the war, and suffering associated with separation from husband and relatives [67]. The war in Ukraine is having a devastating impact on the health of pregnant women, requiring a comprehensive and integrated approach to healthcare that includes both medical and psychological support [2]. In these conditions, pregnant women are constantly exposed to new threats in their various combinations right here and now, which requires a great load on the adaptive systems of the body, which often become excessive and lead to a breakdown in adaptation. The current pregnancy occurs against the background of a combination of the effects of chronic stress before its onset and the layering of acute stress due to the outbreak of war and all its manifestations in the woman's life [68].

This is especially true for forcibly displaced women who face high levels of anxiety, psychological stress, and loneliness during war, which indicates the need for comprehensive support, which should include psychological assistance, social services, and programs to reduce feelings of isolation [16].

The outbreak of a full-scale war in Ukraine not only forced Ukrainian migrant women to adapt to a different reality, but also stimulated state institutions in western countries to develop new access strategies to ensure individual and family well-being [69]. Improving support for refugee women worldwide requires a comprehensive and inclusive approach, involving both state- and non-state-based actors. Culturally sensitive health services, including mental and reproductive health support, adapted to their specific needs, are essential. And appropriate education for health care professionals is another key component in facilitating adaptation [10]. Controlling emotions during an emergency is of great importance for making rational decisions, ensuring personal safety and facilitating effective response measures. However, the correct behavior during emergencies and wartime circumstances is difficult to determine, but one should rely on the ability to calm emotional processes through the regulation of motor, physiological, cognitive and generally psychological reactions, such actions will help keep the body under some control [70].

It should be emphasized that the stress caused by war is characterized by the fact that its effect mostly exceeds the person's ability to adapt to it. The fight against stress primarily involves stopping the effect of the stress factor on the body. Unfortunately, in a state of war, the implementation of this point becomes impossible, so it is necessary to take this fact into account when providing psychological assistance [71]. Understanding this problem creates a great need for research into assessing the psycho-emotional state of women and developing diagnostic tools aimed at identifying cases of anxiety or depression during pregnancy [72]. One approach to overcoming the crisis situation for women of reproductive age recommends providing psycho-emotional assistance in four forms: preparation for motherhood and the birth process; psychosocial counseling at the individual and family levels; psychosocial assistance to a pregnant woman and the mother of a newborn baby; comprehensive psychosocial assistance regarding general problems of motherhood. That is why, despite the fact that current international recommendations differ in some aspects, most of them share the view that early detection of the problem based on an assessment of the psychological state of the pregnant woman and the provision of necessary assistance is of key importance [73].

CONCLUSIONS

The analysis of national and foreign scientific researches shows that the consequences of traumatic events during war are symptoms of anxiety, depression, PTSD, which are caused by stress in relation to changes in habitual living conditions, permanent uncertainty, threats to personal safety and the safety of relatives, loss of loved ones, etc. Studies confirm that mental disorders common among refugees during wartime, as a rule, remain a problem even after many years. And of course, women are most susceptible to traumatic events and their consequences during hostilities. Especially pregnant women, who have an increased level of stress and anxiety even in peacetime, and the war factor can have a critical impact on women's health, increasing the risk of adverse obstetric and peri-

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natal consequences. When providing psychological assistance to pregnant women, first of all, there must be an understanding that the effect of stress caused by war mostly exceeds a person's ability to adapt to it. At the same time, the cessation of the effect of such a significant stress factor on the body as the war factor is impossible before its end, regardless of whether the woman continues to be in her place of permanent residence, has moved to a safer region of the country, or is a refugee who has left the country. This view of the problem confirms not only the need for a comprehensive approach to the diagnosis of psychological disorders in pregnant women, but also determines the immediate need to develop individual programs of medical and psychological support for women during pregnancy.

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